

AMENDMENTS TO THE DRAWINGS

The attached sheets of drawings include changes to Figures 1-4. These sheets, which include Figures 1-4, replace the original sheets including those same Figures. The Figures have been amended to include a Prior Art label.

Attachment: Replacement sheets

REMARKS

In view of the above amendment, Applicant believes the pending application is in condition for allowance.

Claim 3 is now present in this application. Claim 3 is independent.

Amendments have been made to the drawings. Claims 1 and 2 have been canceled and claim 3 has been added. Reconsideration of this application, as amended, is respectfully requested.

Priority Under 35 U.S.C. § 119

Applicant thanks the Examiner for acknowledging Applicant's claim for foreign priority under 35 U.S.C. § 119, and receipt of the certified priority document in the international application.

Information Disclosure Citation

Applicant thanks the Examiner for considering the references supplied with the Information Disclosure Statement filed May 26, 2006, and for providing Applicant with an initialed copy of the PTO-SB08 form filed therewith.

Objection to the Drawings

The Examiner has objected to the drawings because Figures 1-4 should have a "Prior Art" label.

In order to overcome this objection, Applicant is concurrently submitting Replacement Drawing Sheets for the Examiner's approval, that address the deficiency pointed out by the Examiner. Accordingly, reconsideration and withdrawal of this objection are respectfully requested.

Claim Objection

The Examiner has objected to claim 1 because of an informality. In order to overcome this objection, Applicant has canceled claim 1. In addition, new claim 3 has been written in a

manner that avoids the informality identified in this objection. Accordingly, reconsideration and withdrawal of this objection is respectfully requested.

Rejection Under 35 U.S.C. § 112, 2nd Paragraph

Claims 1 and 2 stand rejected under 35 U.S.C. § 112, 2nd Paragraph. This rejection is respectfully traversed.

The Examiner has set forth certain instances wherein the claim language is indefinite.

In order to overcome this rejection, Applicant has canceled claims 1 and 2. In addition, new claim 3 has been written in a manner that avoids the indefinite language identified in this rejection. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

Rejections under 35 U.S.C. §103

Claims 1 and 2 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Chatham et al. in view of Tan. This rejection is respectfully traversed.

A complete discussion of the Examiner's rejection is set forth in the Office Action, and is not being repeated here.

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the instant application, Applicant respectfully submits that claims 1 and 2 have been cancelled, thus rendering this rejection under 35 U.S.C. § 103 moot. Accordingly, reconsideration and withdrawal of this rejection are respectfully requested.

New Claim

Independent claim 3 has been added for the Examiner's consideration, and recites a combination of elements in a flow path control valve including a housing formed with a valve chamber that communicates fluidly with an inlet and an outlet; an opening/closing member installed movably within the valve chamber for moving between an opening position and a closing position to open or close a passage between the inlet and the outlet, a side of the opening/closing member including a pressure equilibrium hole for causing the valve chamber to

be in fluid communication with the inlet; an elastic member installed within the valve chamber to bias the opening/closing member toward the closing position; a bypass tube provided to discharge a fluid, which has been introduced into the valve chamber through the pressure equilibrium hole, to the outlet; a float for opening and closing the bypass tube; a solenoid installed at a side of the housing to electromagnetically move the opening/closing valve and to electromagnetically move the float; an auxiliary valve chamber formed between the outlet and a discharge portion of the valve chamber; an auxiliary opening/closing member movably installed in the auxiliary valve chamber to move between an opening position and a closing position where the auxiliary opening/closing member opens and closes a passage between the outlet and the discharge portion of the valve, respectively; an auxiliary elastic member disposed within the auxiliary valve chamber to bias the auxiliary opening/closing member to the closing position; and an auxiliary pressure equilibrium hole formed at a side of the auxiliary opening/closing member to cause the auxiliary valve chamber to be in fluid communication with the outlet of the housing. Applicant respectfully submits that this combination of elements as set forth in independent claim 3 is not disclosed or made obvious by the prior art of record.

Applicant respectfully submits that a primary feature of the present invention is that a flow path control valve comprises a valve chamber and an auxiliary valve chamber. The auxiliary valve chamber has an auxiliary opening/closing member, an auxiliary elastic member and an auxiliary pressure equilibrium hole. In the present invention, when the working fluid circulates forward, the auxiliary opening/closing member is moved to the opening position by means of the pressure of the working fluid to allow the working fluid to flow through the passage.

On the contrary, when the working fluid circulates in a reverse direction, the working fluid introduced from the outlet of the housing flows into the auxiliary valve chamber through the auxiliary pressure equilibrium hole. When the pressure of the working fluid introduced into the auxiliary valve chamber is in equilibrium with the pressure of the outlet, the auxiliary opening/closing member is moved to the closing position by means of elastic force of the elastic member.

Applicant respectfully submits that the modification of Chatham et al. by Tan is improper in this instance, due to the different working characteristics of the different style valves disclosed

in the two references. The conduit 56 of Tan indicated by the Examiner as reading on the claimed “bypass tube” does not function in the same manner as the bypass tube of the present invention. In Tan, the conduit 56 is used as an actuation device to permit the main diaphragm to open and close via fluid movement through orifice 48. When fluid is permitted to flow through the conduit 56, any flow into the chamber 32 through the orifice 48 can escape, thereby permitting the diaphragm 34 to remain in the valve open position shown in Fig. 2. When fluid is prevented from flowing through the conduit 56, any flow into the chamber 32 through the orifice 48 cannot escape, thereby moving the diaphragm 34 toward the position shown in Fig. 2 to close the valve. Thus, the conduit 56 of Tan acts more like an actuation conduit rather than a bypass tube as used in the present invention. Therefore, any motivation to modify Chatham et al. to include a bypass tube is not understood. Chatham et al. already has a solenoid 4 to actuate the valve, so there would be no need to include the conduit 56 of Tan to actuate the valve.

In addition, claim 3 recites a combination including “a float for opening and closing the bypass tube,” and “a solenoid installed at a side of the housing to electromagnetically move the opening/closing valve and to electromagnetically move the float,” which is not disclosed or made obvious by Chatham et al., with or without Tan. The valve of Chatham et al. is designed to work without a bypass tube, and particularly without a bypass tube having a float for opening and closing the bypass tube and that is electromagnetically moved by the solenoid that moves the opening/closing valve.

Applicant respectfully submits that the combination of elements as set forth in independent claim 3 is not disclosed or made obvious by the prior art of record, including Chatham et al. in view of Tan, for the reasons explained above. Accordingly, consideration and allowance of claim 3 are respectfully requested.

Additional Cited Reference

Since the remaining reference cited by the Examiner has not been utilized to reject the claims, but has merely been cited to show the state of the art, no comment need be made with respect thereto.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

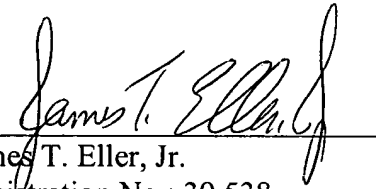
If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone James T. Eller, Jr., Registration No. 39,538, at (703) 205-8000, in the Washington, D.C. area.

Prompt and favorable consideration of this Amendment is respectfully requested.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Dated: June 4, 2008

Respectfully submitted,

By 
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Attachments